

The conservation of the Hamiltonian structures in the deformations of the Whitham systems

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We consider the construction of the deformed Whitham system for the KdV-equation in the one-phase case and investigate the conservation of the Hamiltonian properties in this situation. It is shown then, that both the Gardner - Zakharov - Faddeev and the Magri brackets give the deformed Dubrovin - Novikov brackets (the brackets of Dubrovin - Zhang type) for the deformed Whitham system constructed by our procedure. The general approach used in the paper gives a scheme for the averaging of the Poisson structures in the general situation.

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